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FILE LAST UPDATED: 10 Oct 2004  (20041010/ED)

  This file contains CAS Registry Numbers for easy and accurate
  substance identification.


=> s remov? (4a) oxygen (5a) synthesis gas
       1116755 REMOV?
        651306 OXYGEN
          6358 OXYGENS
        655739 OXYGEN
                  (OXYGEN OR OXYGENS)
       1144312 SYNTHESIS
             3 SYNTHESISES
         62627 SYNTHESES
       1179764 SYNTHESIS
                  (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
       1382072 GAS
        475804 GASES
       1552732 GAS
                  (GAS OR GASES)
         14907 SYNTHESIS GAS
                  (SYNTHESIS(W)GAS)
L1          20 REMOV? (4A) OXYGEN (5A) SYNTHESIS GAS

=> s l1 and fischer tropsch
         21999 FISCHER
            15 FISCHERS
         22011 FISCHER
                  (FISCHER OR FISCHERS)
          7127 TROPSCH
          7033 FISCHER TROPSCH
                  (FISCHER(W)TROPSCH)
L2           1 L1 AND FISCHER TROPSCH

=> d l1 ibib ab

L1   ANSWER 1 OF 20  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2003:633289  CAPLUS
DOCUMENT NUMBER:          139:152079
TITLE:                    Selective removal of oxygen from syngas in production
                          of liquid hydrocarbons
INVENTOR(S):              Wang, Daxiang; Wright, Harold A.; Ortego, Beatrice C.;
                          Trinh, Sinh H.; Espinoza, Rafael L.
PATENT ASSIGNEE(S):       Conoco Inc., USA; Conocophillips Co.
SOURCE:                   U.S. Pat. Appl. Publ., 27 pp.
                          CODEN: USXXCO
```

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
US 2003153632	A1	20030814	US 2002-219108		20020815
US 6747066	B2	20040608			
US 2004198845	A1	20041007	US 2004-822528		20040412
PRIORITY APPLN. INFO.:			US 2002-353774P	P	20020131
			US 2002-353822P	P	20020131
			US 2002-219108	A3	20020815

AB The present invention is an improvement in the preparation of liquid hydrocarbons from natural gas/methane, O and/or steam. In particular, the present invention relates to processes for the production of synthesis gas, reducing the O concentration from the synthesis gas, and the production of liquid hydrocarbons using the O reduced synthesis gas as a feedstock. More particularly, the present invention described herein identifies catalyst compns., apparatus and methods of using such catalysts and apparatus for preparing liquid hydrocarbons via O reduced synthesis gas all in accordance with the present invention.
REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d his

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FILE 'CAPLUS' ENTERED AT 15:00:37 ON 11 OCT 2004
L1 20 S REMOV? (4A) OXYGEN (5A) SYNTHESIS GAS
L2 1 S L1 AND FISCHER TROPSCH

=> s l1 not l2
L3 19 L1 NOT L2

=> s l3 and hydrocarbon synthesis
310822 HYDROCARBON
310348 HYDROCARBONS
478120 HYDROCARBON
(HYDROCARBON OR HYDROCARBONS)
1144312 SYNTHESIS
3 SYNTHESISES
62627 SYNTHESES
1179764 SYNTHESIS
(SYNTHESIS OR SYNTHESISES OR SYNTHESES)
1950 HYDROCARBON SYNTHESIS
(HYDROCARBON(W)SYNTHESIS)
L4 0 L3 AND HYDROCARBON SYNTHESIS

=> s l3 and first synthesis gas
925301 FIRST
57 FIRSTS
925348 FIRST
(FIRST OR FIRSTS)
1144312 SYNTHESIS
3 SYNTHESISES
62627 SYNTHESES
1179764 SYNTHESIS
(SYNTHESIS OR SYNTHESISES OR SYNTHESES)
1382072 GAS

```
        475804 GASES
       1552732 GAS
                 (GAS OR GASES)
             8 FIRST SYNTHESIS GAS
                 (FIRST(W)SYNTHESIS(W)GAS)
L5           0 L3 AND FIRST SYNTHESIS GAS

=> s l3 and hydrocarbon? product?
        479998 HYDROCARBON?
       2531599 PRODUCT?
          2216 HYDROCARBON? PRODUCT?
                 (HYDROCARBON?(W)PRODUCT?)
L6           0 L3 AND HYDROCARBON? PRODUCT?

=> s l3 and hydrocarbon
        310822 HYDROCARBON
        310348 HYDROCARBONS
        478120 HYDROCARBON
                 (HYDROCARBON OR HYDROCARBONS)
L7           2 L3 AND HYDROCARBON

=> d l7 ibib ab 1-2

L7   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         1986:21841  CAPLUS
DOCUMENT NUMBER:          104:21841
TITLE:                    Purification of carbon monoxide by oxidation and
                          adsorption
INVENTOR(S):              Nishizawa, Yasuo; Takeuchi, Masami
PATENT ASSIGNEE(S):       Kansai Coke and Chemicals Co., Ltd., Japan
SOURCE:                   Jpn. Kokai Tokkyo Koho, 5 pp.
                          CODEN: JKXXAF
DOCUMENT TYPE:            Patent
LANGUAGE:                 Japanese
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.         DATE
     ---------------      ----   --------    --------------------    --------
     JP 60190495           A2    19850927    JP 1984-45994           19840310
     JP 63060080           B4    19881122
PRIORITY APPLN. INFO.:                       JP 1984-45994           19840310
AB   CO, containing small amts. of O, for production of synthesis gas is purified by
     catalytic oxidation of CO over partially reduced 20-40:60-80 (weight%) CuO-ZnO
     followed by removal of CO2, moisture, S compds., or hydrocarbons
     over active carbon (pore diameter 14-30 Å) or its mixts. with zeolite
     and/or Al2O3 by pressure-swing adsorption at <230°.  Thus, a gas
     mixture of 84.5:15.0:0.5 (volume%) CO-N-O was passed over partially reduced
     80:20 (weight%) ZnO-CuO at 50,000 h-1, 100°, and 9 kg/cm2 to remove O
     and then over active carbon (average pore diameter 17 Å) at 500 h-1 and 9
     kg/cm2 to remove CO2.

L7   ANSWER 2 OF 2  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         1960:30989  CAPLUS
DOCUMENT NUMBER:          54:30989
ORIGINAL REFERENCE NO.:   54:6049e-h
TITLE:                    Gas purification for ammonia synthesis
AUTHOR(S):                Guntermann, Wilhelm
SOURCE:                   GWF, das Gas- und Wasserfach (1959), 100, 1225-9
                          CODEN: GAWFAN; ISSN: 0367-3839
DOCUMENT TYPE:            Journal
LANGUAGE:                 Unavailable
AB   When synthesis gas is made from oils with high S content, considerable
     amts. of organic S compds., especially COS, must be removed.  Any O must be
removed
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from the gas to avoid later S formation, and the gas is then passed over activated Al2O3 at 100-20° to convert COS to H2S in the presence of H2O. H2S is then removed by the Alkazid process, which was chosen because the gas is free from HCN and SO2 and because the process selectively removes H2S. The gas is then mixed with steam and passed through the CO converter. The amount of steam increases sharply with reduction in final CO content. Heat exchangers are used to minimize the amount of heat required to bring the gas-steam mixture to the conversion temperature and to reduce the amount of makeup steam required. After cooling, any remaining H2S is removed in a dry purifying tower. CO2 is then scrubbed from the gas by the Giammarco-Vetrocoke process in which a pressure of only 5 atmospheric is used, but the gas leaving the plant has a CO2 content of only 0.3%. This plant uses an activated alkali solution, containing As2O3 as the activator. This solution is regenerated by heating and by passing air through it in a special tower.

```
=> s purif? synthesis gas (3a) free (2a) oxygen
        747155 PURIF?
       1144312 SYNTHESIS
             3 SYNTHESISES
         62627 SYNTHESES
       1179764 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
       1382072 GAS
        475804 GASES
       1552732 GAS
                 (GAS OR GASES)
            69 PURIF? SYNTHESIS GAS
                 (PURIF?(W)SYNTHESIS(W)GAS)
       1163441 FREE
           576 FREES
       1163926 FREE
                 (FREE OR FREES)
        651306 OXYGEN
          6358 OXYGENS
        655739 OXYGEN
                 (OXYGEN OR OXYGENS)
L8           0 PURIF? SYNTHESIS GAS (3A) FREE (2A) OXYGEN

=> s synthesis gas (3a) purif?
       1144312 SYNTHESIS
             3 SYNTHESISES
         62627 SYNTHESES
       1179764 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
       1382072 GAS
        475804 GASES
       1552732 GAS
                 (GAS OR GASES)
         14907 SYNTHESIS GAS
                 (SYNTHESIS(W)GAS)
        747155 PURIF?
L9         474 SYNTHESIS GAS (3A) PURIF?

=> s l9 and oxygen (3a) remov?
        651306 OXYGEN
          6358 OXYGENS
        655739 OXYGEN
                 (OXYGEN OR OXYGENS)
       1116755 REMOV?
         10522 OXYGEN (3A) REMOV?
L10         14 L9 AND OXYGEN (3A) REMOV?
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=> s l10 and (fischer tropsch or hydrocarbon synthesis)
         21999 FISCHER
            15 FISCHERS
         22011 FISCHER
                 (FISCHER OR FISCHERS)
          7127 TROPSCH
          7033 FISCHER TROPSCH
                 (FISCHER(W)TROPSCH)
        310822 HYDROCARBON
        310348 HYDROCARBONS
        478120 HYDROCARBON
                 (HYDROCARBON OR HYDROCARBONS)
       1144312 SYNTHESIS
             3 SYNTHESISES
         62627 SYNTHESES
       1179764 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
          1950 HYDROCARBON SYNTHESIS
                 (HYDROCARBON(W)SYNTHESIS)
L11         0 L10 AND (FISCHER TROPSCH OR HYDROCARBON SYNTHESIS)

=> s l10 and liquid hydrocarbon?
        662142 LIQUID
        120553 LIQUIDS
        753384 LIQUID
                 (LIQUID OR LIQUIDS)
        915802 LIQ
         87406 LIQS
        949755 LIQ
                 (LIQ OR LIQS)
       1321693 LIQUID
                 (LIQUID OR LIQ)
        479998 HYDROCARBON?
         10087 LIQUID HYDROCARBON?
                 (LIQUID(W)HYDROCARBON?)
L12         0 L10 AND LIQUID HYDROCARBON?

=> d l10 ibib ab 1-5

L10  ANSWER 1 OF 14  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2001:207895  CAPLUS
DOCUMENT NUMBER:          134:239738
TITLE:                    Removal of carbon dioxide from gases by using an
                          activated alumina adsorbent
INVENTOR(S):              Monereau, Christian
PATENT ASSIGNEE(S):       Air Liquide SA pour l'Etude et l'Exploitation des
                          Procedes Georges Claude, Fr.
SOURCE:                   Eur. Pat. Appl., 10 pp.
                          CODEN: EPXXDW
DOCUMENT TYPE:            Patent
LANGUAGE:                 French
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.         DATE
     ---------------      ----   --------    --------------------    --------
     EP 1084743            A1    20010321    EP 2000-401997          20000711
     EP 1084743            B1    20021113
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO
     FR 2798304            A1    20010316    FR 1999-11425           19990913
     FR 2798304            B1    20011109
     AT 227601             E     20021115    AT 2000-401997          20000711
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US 6379430	B1	20020430	US 2000-629700	20000731
JP 2001104737	A2	20010417	JP 2000-276452	20000912
PRIORITY APPLN. INFO.:			FR 1999-11425 A	19990913

AB A gas containing CO2 and impurities (e.g., H2O, NOx, hydrocarbons, chlorinated hydrocarbons) is purified by adsorption (e.g., thermal-swing adsorption, pressure-swing adsorption) on an adsorbent containing activated Al2O3. The adsorbent has a surface area of 200-299 m2/g and contains Al2O3 ≥80 (preferably ≥92), SiO2 0.0001-3, Fe2O3 <1, and ≥1 alkali metal or alkaline earth metal oxide (e.g., Na2O, K2O) 0.001-7.25%. The system is suitable for air purification prior to cryogenic distillation in production of N2, O2, and/or Ar and for **purifn.** of **synthesis gas** prior to cryogenic distillation in production of H2 and/or CO.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 2 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1993:411738 CAPLUS
DOCUMENT NUMBER: 119:11738
TITLE: Lowering the content of iron and nickel carbonyls in generator gas by increasing the temperature in the reactor for hydrolysis of carbonyl sulfide
AUTHOR(S): Loukota, Jiri; Kubicka, Rudolf
CORPORATE SOURCE: Chem. Zavody, Litvinov, Czech.
SOURCE: Chemicky Prumysl (1993), 43(2), 43-5
CODEN: CHPUA4; ISSN: 0009-2789
DOCUMENT TYPE: Journal
LANGUAGE: Czech

AB Removal of trace amts. of Fe(CO)5 and Ni(CO)4 from synthetic gas, produced by partial oxidation of petroleum refining residues and used mainly for H manufacture, was investigated. After desulfurization, the synthesis gas is saturated with steam and passed through a reactor filled with a Co-Mo/Al2O3 catalyst and a reactor filled with AC2O3 to remove residual O, hydrolyze COS, and decompose Fe(CO)5 and Ni(CO)4. When temperature in the hydrolysis step was increased from 150 to 200°, removal of Fe(CO)5 was increased by 85% but removal of Ni(CO)4 was increased only by 25%. However, amount of deposits in the downstream high-temperature conversion equipment was decreased by .apprx.70%.

L10 ANSWER 3 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1993:178249 CAPLUS
DOCUMENT NUMBER: 118:178249
TITLE: Operating experience of gas purification system of Heavy Water Plant Talcher
AUTHOR(S): Bhattacharya, R.; Mohanty, P. R.; Pandey, B. L.
CORPORATE SOURCE: Heavy Water Plant Talcher, India
SOURCE: Natl. Symp. Comm. Oper. Exper. Heavy Water Plants Assoc. Chem. Ind. (1992), paper 1.11, 11 pp.. Bhabha At. Res. Cent.: Bombay, India.
CODEN: 58WEA5
DOCUMENT TYPE: Conference
LANGUAGE: English

AB The operating experience at Heavy Water Plant Talcher shows that the purification system was performed satisfactorily even with levels of impurities as much as 15 to 20 ppm of oxygen and carbon monoxide. The system could, however, not be tested at designed gas throughput and on a sustained basis. However, increase in gas throughput up to the design value is not expected to pose any problem on the performance of the purification system. From the experience gained at Heavy Water Plant Talcher and limitations identified, a reliable system can be designed which will ensure trouble free operation of the down stream sections of all Heavy Water Plants.

L10 ANSWER 4 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1986:21841 CAPLUS
DOCUMENT NUMBER: 104:21841
TITLE: Purification of carbon monoxide by oxidation and adsorption
INVENTOR(S): Nishizawa, Yasuo; Takeuchi, Masami
PATENT ASSIGNEE(S): Kansai Coke and Chemicals Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 60190495	A2	19850927	JP 1984-45994	19840310
JP 63060080	B4	19881122		
PRIORITY APPLN. INFO.:			JP 1984-45994	19840310

AB CO, containing small amts. of O, for production of **synthesis gas** is **purified** by catalytic oxidation of CO over partially reduced 20-40:60-80 (weight%) CuO-ZnO followed by removal of CO2, moisture, S compds., or hydrocarbons over active carbon (pore diameter 14-30 Å) or its mixts. with zeolite and/or Al2O3 by pressure-swing adsorption at <230°. Thus, a gas mixture of 84.5:15.0:0.5 (volume%) CO-N-O was passed over partially reduced 80:20 (weight%) ZnO-CuO at 50,000 h-1, 100°, and 9 kg/cm2 to remove O and then over active carbon (average pore diameter 17 Å) at 500 h-1 and 9 kg/cm2 to remove CO2.

L10 ANSWER 5 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1985:563331 CAPLUS
DOCUMENT NUMBER: 103:163331
TITLE: Method and apparatus for preventing oxygen breakthrough in coal gasification
INVENTOR(S): Richter, Gerhard; Groeschel, Lutz; Klose, Erhard; Burkhardt, Horst; Heynisch, Joachim; Krieg, Peter; Neumann, Berthold; Schmidt, Andrea; Slabik, Johannes; Wuntschoff, Todor
PATENT ASSIGNEE(S): VEB Gaskombinat Schwarze Pumpe, Ger. Dem. Rep.
SOURCE: Ger. (East), 9 pp.
CODEN: GEXXA8
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DD 219791	A1	19850313	DD 1983-257507	19831205
PRIORITY APPLN. INFO.:			DD 1983-257507	19831205

AB Raw synthesis gas from fixed-bed coal gasification (especially pressurized gasification of brown coal) is passed through a fixed bed or fluidized bed consisting of a fuel (e.g., coal) to remove residual O (remaining from the gasification agent) to prevent explosions. At 400-500°, O is completely converted; the gas can then be subjected to conventional purification

=> d l10 ibib ab 6-14

L10 ANSWER 6 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1980:481017 CAPLUS
DOCUMENT NUMBER: 93:81017
TITLE: Some preparation problems, activity, and thermal stability of a copper-containing catalyst used for the

removal of **oxygen** from synthesis gas
AUTHOR(S): Atroshchenko, V. I.; Slabun, I. A.; Gavrya, N. A.; Karavaev, M. M.; Lender, A. A.
CORPORATE SOURCE: Khar'k. Politekh. Inst., Kharkov, USSR
SOURCE: Tezisy Dokl. - Ukr. Resp. Konf. Fiz. Khim., 12th (1977), 103-4. Editor(s): Yatsimirskii, K. B. Izd. Naukova Dumka: Kiev, USSR.
CODEN: 42WKA4
DOCUMENT TYPE: Conference
LANGUAGE: Russian
AB A Cu/Al2O3 catalyst was developed for the removal of O from a H2 + CO mixture for the synthesis of MeOH. The conditions were optimized for the impregnation of the Al2O3 carrier with Cu in a solution The catalyst was tested at 50 atmospheric and 210-230° for the **purifn.** of a **synthesis gas** with an initial content of 0.3-0.33% O2. The Cu/Al2O3 catalyst showed higher activity and thermal stability than the previously used com. catalyst NTK-2.

L10 ANSWER 7 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1980:131480 CAPLUS
DOCUMENT NUMBER: 92:131480
TITLE: Production of ammonia **synthesis gas** by **purification** and shift conversion of gas produced from coal
AUTHOR(S): Partridge, Lincoln J.
CORPORATE SOURCE: Modderfontein Fact., AECI Ltd., Johannesburg, 1645, S. Afr.
SOURCE: Chemical Engineer (Rugby, United Kingdom) (1980), 353, 88-90, 94
CODEN: CMERA9; ISSN: 0302-0797
DOCUMENT TYPE: Journal
LANGUAGE: English
AB In the use of coal for manufacturing gases for NH3 synthesis, the deposition of S and S compds. in gas compressors and the Rectisol unit (mainly elemental S, Fe sulfide, and Roussin's salt) was decreased by decreasing the water rate to the HCN removal column so that some HCN could enter the H2S absorber to form NH4SCN which is dissolved in the MeOH. In the shift conversion unit the corrosion of C steel tubes in the recycle water heater and distribution trays in the saturator and desaturator was decreased by adding NH3 and limiting the maximum allowable liquid velocities. The disintegration of the shift conversion catalyst pellets, caused by contamination with SiO2, was prevented by replacing ceramic saddles used in packing the saturator and desaturator with stainless steel mini rings. The disintegration caused by thermal cycling during shutdown and startup was decreased by improving temperature control. Absorption of NO by N in the liquid-N wash cycle was decreased by reducing the NO with NH3 and by passing the raw gas from coal gasification through a Co molybdate catalyst to remove both O and NO. When the O was removed, S deposition in the Rectisol plant stopped.

L10 ANSWER 8 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1979:5837 CAPLUS
DOCUMENT NUMBER: 90:5837
TITLE: Catalytic removal of unsaturated compounds and oxygen from synthesis gas for acetylene production. Communication 2
AUTHOR(S): Furen, E. L.; Fingerova, M. S.
CORPORATE SOURCE: Gos. Nauchno-Issled. Proektn. Inst. Azotn. Prom. Prod. Org. Sint., Severodonetsk, USSR
SOURCE: Kataliz i Katalizatory (1978), 16, 103-6
CODEN: KAKAAQ; ISSN: 0453-3585
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB C2H2 was removed from synthesis gas for C2H2 production by hydrogenation over 0.1% Pd/Al2O3 at 80-90°, 7 atmospheric and space velocity 10,000 h-1.

Removal of C2H4 and O2 required a temperature at 230-40° under these conditions.

L10 ANSWER 9 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1979:5836 CAPLUS
DOCUMENT NUMBER: 90:5836
TITLE: Catalytic removal of unsaturated compounds and oxygen from synthesis gas for acetylene production. Communication 1
AUTHOR(S): Furen, E. L.; Fingerova, M. S.
CORPORATE SOURCE: Gos. Nauchno-Issled. Proektn. Inst. Azotn. Prom. Prod. Org. Sint., Severodonetsk, USSR
SOURCE: Kataliz i Katalizatory (1978), 16, 99-103
CODEN: KAKAAQ; ISSN: 0453-3585
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB C2H2, C2H4 and O2 were removed from synthesis gas for C2H2 production by hydrogenation at 100-300°, 1 atmospheric and space velocity 5000-40,000 h1 over 0.1 or 2% Pd/Al2O3.

L10 ANSWER 10 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1969:490695 CAPLUS
DOCUMENT NUMBER: 71:90695
TITLE: Conversion of carbon monoxide and simultaneous removal of nitrogen oxide and oxygen from the synthesized gas with the aid of low temperature catalysts
AUTHOR(S): Shishkov, Dimiter S.; Koicharova, M.; Ivanov, Diko; Galunski, Z.; Dimov, G.; Gruev, K.; Grueva, D.
CORPORATE SOURCE: Chem.-Technol. Inst., Sofia, Bulg.
SOURCE: Allgemeine und Praktische Chemie (1969), 20(3), 68-70
CODEN: APKCAR; ISSN: 0002-595X
DOCUMENT TYPE: Journal
LANGUAGE: German
AB The composition of synthesis (for NH3) gas before conversion was: 88 H, 3.5 N, 5.4 CO, 2.5 CH4, 0.6% CO2, up to 5 mg./m.3 H2S, 0.5 ppm. N2O, and 1000 ppm. O. The low-temperature catalysts had Zn, Cu, and Cr as fundamental ingredients. Their sp. surface was from 30 to 60 m.2/g., and the pore radius was 150-300 A. The catalysts were protected against S compds. by a coating of desulfurated ZnO. Their reduction was carried out below 250° with a water free gaseous mixture The conversion showed equal concns. of CO with different low-temperature catalysts. The rate of flow at low temps., however, had a considerable influence on the amount of residual CO. The reduction power for NO and N was also good, and it was possible to have a single stage conversion. Solid or liquid fuels were usable, and the remaining CO (up to 0.3%) could be removed with liquid N, of which less was now consumed. The conversion caused a 5% increase of NH3 production.

L10 ANSWER 11 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1968:444972 CAPLUS
DOCUMENT NUMBER: 69:44972
TITLE: **Removing oxygen** and carbonyl sulfide from gases
PATENT ASSIGNEE(S): Shell Internationale Research Maatschappij N. V.
SOURCE: Neth. Appl., 10 pp.
CODEN: NAXXAN
DOCUMENT TYPE: Patent
LANGUAGE: Dutch
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
NL 6615007		19680425	NL	19661024

FR 1541573			FR
GB 1145032			GB
US 3554689		19710000	US

AB Synthesis gas containing O and COS is treated at 70-120° successively with a hydrogenation catalyst composed of sulfided metals from Group VI and (or) VIII, such as sulfided CoMoO4 on Al2O3, which convert the O to H2O, and then with an Al2O3 catalyst (sp. surface >50 m.2/g.) in pH 9 alkali phosphate solution to convert COS to H2S and CO. By removing the O before the COS, the reaction can be performed at a temperature <150-350°, without deposition of S on the catalyst.

L10 ANSWER 12 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1963:8070 CAPLUS
DOCUMENT NUMBER: 58:8070
ORIGINAL REFERENCE NO.: 58:1276b-c
TITLE: **Removal** of **oxygen**, carbon monoxide, carbon dioxide and water from synthesis gas
INVENTOR(S): Delassus, Marcel; Lefrancois, Bernard; Vaniscotte, Christian
PATENT ASSIGNEE(S): Houilleres du Bassin-du-Nord et du Pas-de-Calais
SOURCE: 4 pp.
DOCUMENT TYPE: Patent
LANGUAGE: Unavailable
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3055732		19620925	US	
GB 917039			GB	
PRIORITY APPLN. INFO.:			FR	19590718

AB **Synthesis gas** mixts. are **purified** of O, CO, CO2, and H2O by treating the mixture with a solution of at least 0.2% by weight alkali metal amide in liquid NH3 at -70 to + 100° and 50-500 kg./sq. cm. Thus, a N + 3H2 gas mixture intended for the synthesis of NH3 contains 17 p.p.m. O2, 12 p.p.m. CO and CO2, and 5 mg./cu. m. H2O. This gas, compressed to 500 kg./cu. m., is introduced at -20° at the base of a tubular reactor and dispersed by a fritted iron plate. The reactor contains 600 cc. 1% by weight KNH2 in NH3. After the passage of 50 cu.m. of gas at a rate of 25 cu. m./hr., the exit gas contains 1 p.p.m. O2, 1 p.p.m. CO + CO2, and 0.5 mg./cu. m. H2O.

L10 ANSWER 13 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1956:75592 CAPLUS
DOCUMENT NUMBER: 50:75592
ORIGINAL REFERENCE NO.: 50:14207a-b
TITLE: **Purification** of **synthesis gas**. Removal of dust, carbon dioxide, and sulfur compounds
AUTHOR(S): Wainwright, H. W.; Kane, L. J.; Wilson, M. W.; Shale, C. C.; Ratway, J.
CORPORATE SOURCE: U.S. Bur. of Mines, Morgantown, West Va.
SOURCE: Journal of Industrial and Engineering Chemistry (Washington, D. C.) (1956), 48, 1123-33
CODEN: JIECAD; ISSN: 0095-9014
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB H2S, O, dust, CO2, and COS are the impurities present in raw synthesis gas produced at Morgantown, West Va., by reaction of coal with O and steam. Exptl. data have been given on the quantities of the impurities present, analytical methods suitable for determining low concns. of these impurities, and processes for removing them from the raw gas. The selection of any one of several purification schemes described will depend on the composition of the gas, the gas pressure, comparative costs of the various steps, and other

fractors.

L10 ANSWER 14 OF 14 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1954:62163 CAPLUS
DOCUMENT NUMBER: 48:62163
ORIGINAL REFERENCE NO.: 48:11012g-h
TITLE: High-pressure purification and regeneration in ammonia synthesis
AUTHOR(S): Jagannathan, R.
SOURCE: Trans. Indian Inst. Chem. Engrs. (1953), Volume Date 1952-1953, 5, 109-16
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB cf. preceding abstract The removal of impurities, e.g. CO, CO2, and O, from the gas stream entering the reactor is accomplished by the use of cold ammoniacal Cu(I) formate solution Regeneration of spent solution is brought about by heating to drive off CO and CO2. Flow diagrams are given for both purification and regeneration stages.

WEST Search History

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Hide?	Set Name	Query	Hit Count
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ		
☐	L8	l6 not l7	33
☐	L7	l6 and liquid hydrocarbon$1	21
☐	L6	remov$3 near4 oxygen with synthesis gas	54
☐	L5	remov$3 oxygen near3 synthesis gas	1
☐	L4	second syngas same less oxygen	3
	DB=PGPB,USPT; THES=ASSIGNEE; PLUR=YES; OP=ADJ		
☐	L3	second syngas same less oxygen	2
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ		
☐	L2	second synthesis gas same less oxygen	0
☐	L1	second synthesis gas with less oxygen	0

END OF SEARCH HISTORY

WEST Search History

Hide Items | Restore | Clear | Cancel

DATE: Monday, October 11, 2004

Hide?	Set Name	Query	Hit Count
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ		
☐	L11	L10 and liquid hydrocarbon$1	20
☐	L10	L9 and fischer tropsch	37
☐	L9	synthesis gas with free near2 oxygen	298
☐	L8	l6 not l7	33
☐	L7	l6 and liquid hydrocarbon$1	21
☐	L6	remov$3 near4 oxygen with synthesis gas	54
☐	L5	remov$3 oxygen near3 synthesis gas	1
☐	L4	second syngas same less oxygen	3
	DB=PGPB,USPT; THES=ASSIGNEE; PLUR=YES; OP=ADJ		
☐	L3	second syngas same less oxygen	2
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ		
☐	L2	second synthesis gas same less oxygen	0
☐	L1	second synthesis gas with less oxygen	0

END OF SEARCH HISTORY

WEST Search History

Hide Items | Restore | Clear | Cancel

DATE: Monday, October 11, 2004

Hide?	Set Name	Query	Hit Count
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ		
☐	L13	L12 and (Fischer near1 tropsch or hydrocarbon synthesis or liquid hydrocarbons)	10
☐	L12	remov$3 near2 oxygen near4 synthesis gas	16
☐	L11	L10 and liquid hydrocarbon$1	20
☐	L10	L9 and fischer tropsch	37
☐	L9	synthesis gas with free near2 oxygen	298
☐	L8	l6 not l7	33
☐	L7	l6 and liquid hydrocarbon$1	21
☐	L6	remov$3 near4 oxygen with synthesis gas	54
☐	L5	remov$3 oxygen near3 synthesis gas	1
☐	L4	second syngas same less oxygen	3
	DB=PGPB,USPT; THES=ASSIGNEE; PLUR=YES; OP=ADJ		
☐	L3	second syngas same less oxygen	2
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ		
☐	L2	second synthesis gas same less oxygen	0
☐	L1	second synthesis gas with less oxygen	0

END OF SEARCH HISTORY

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NEWS	7	AUG 27	BIOCOMMERCE: Changes and enhancements to content coverage
NEWS	8	AUG 27	BIOTECHABS/BIOTECHDS: Two new display fields added for legal status data from INPADOC
NEWS	9	SEP 01	INPADOC: New family current-awareness alert (SDI) available
NEWS	10	SEP 01	New pricing for the Save Answers for SciFinder Wizard within STN Express with Discover!
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NEWS	14	SEP 27	SWETSCAN will no longer be available on STN

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=> file caplus

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FULL ESTIMATED COST	0.21	0.21

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FILE COVERS 1907 - 11 Oct 2004 VOL 141 ISS 16
FILE LAST UPDATED: 10 Oct 2004 (20041010/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

```
=> s remov? (2a) oxygen (3a) synthesis gas
       1116755 REMOV?
        651306 OXYGEN
          6358 OXYGENS
        655739 OXYGEN
                 (OXYGEN OR OXYGENS)
       1144312 SYNTHESIS
             3 SYNTHESISES
         62627 SYNTHESES
       1179764 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
       1382072 GAS
        475804 GASES
       1552732 GAS
                 (GAS OR GASES)
         14907 SYNTHESIS GAS
                 (SYNTHESIS(W)GAS)
L1          17 REMOV? (2A) OXYGEN (3A) SYNTHESIS GAS

=> s l1 and (hydrocarbon synthesis or produc? (1a) hydrocarbon or fischer tropsch
or liquid hydrocarbon?)
        310822 HYDROCARBON
        310348 HYDROCARBONS
        478120 HYDROCARBON
                 (HYDROCARBON OR HYDROCARBONS)
       1144312 SYNTHESIS
             3 SYNTHESISES
         62627 SYNTHESES
       1179764 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
          1950 HYDROCARBON SYNTHESIS
                 (HYDROCARBON(W)SYNTHESIS)
       3911872 PRODUC?
        833264 PRODN
           528 PRODNS
        833444 PRODN
                 (PRODN OR PRODNS)
       4319271 PRODUC?
                 (PRODUC? OR PRODN)
        310822 HYDROCARBON
        310348 HYDROCARBONS
```

```
        478120 HYDROCARBON
                  (HYDROCARBON OR HYDROCARBONS)
         10758 PRODUC? (1A) HYDROCARBON
         21999 FISCHER
            15 FISCHERS
         22011 FISCHER
                  (FISCHER OR FISCHERS)
          7127 TROPSCH
          7033 FISCHER TROPSCH
                  (FISCHER(W)TROPSCH)
        662142 LIQUID
        120553 LIQUIDS
        753384 LIQUID
                  (LIQUID OR LIQUIDS)
        915802 LIQ
         87406 LIQS
        949755 LIQ
                  (LIQ OR LIQS)
       1321693 LIQUID
                  (LIQUID OR LIQ)
        479998 HYDROCARBON?
         10087 LIQUID HYDROCARBON?
                  (LIQUID(W)HYDROCARBON?)
L2            1 L1 AND (HYDROCARBON SYNTHESIS OR PRODUC? (1A) HYDROCARBON OR
                  FISCHER TROPSCH OR LIQUID HYDROCARBON?)

=> d l2 ibib ab

L2   ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2003:633289  CAPLUS
DOCUMENT NUMBER:          139:152079
TITLE:                    Selective removal of oxygen from syngas in production
                          of liquid hydrocarbons
INVENTOR(S):              Wang, Daxiang; Wright, Harold A.; Ortego, Beatrice C.;
                          Trinh, Sinh H.; Espinoza, Rafael L.
PATENT ASSIGNEE(S):       Conoco Inc., USA; Conocophillips Co.
SOURCE:                   U.S. Pat. Appl. Publ., 27 pp.
                          CODEN: USXXCO
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.          DATE
     ---------------      ----   --------    ---------------------    --------
     US 2003153632         A1    20030814    US 2002-219108           20020815
     US 6747066            B2    20040608
     US 2004198845         A1    20041007    US 2004-822528           20040412
PRIORITY APPLN. INFO.:                       US 2002-353774P      P   20020131
                                             US 2002-353822P      P   20020131
                                             US 2002-219108       A3  20020815

AB   The present invention is an improvement in the preparation of liq.
     hydrocarbons from natural gas/methane, O and/or steam.  In
     particular, the present invention relates to processes for the production of
     synthesis gas, reducing the O concentration from the synthesis gas, and the
     production of liq. hydrocarbons using the O reduced
     synthesis gas as a feedstock.  More particularly, the present invention
     described herein identifies catalyst compns., apparatus and methods of using
     such catalysts and apparatus for preparing liq. hydrocarbons
     via O reduced synthesis gas all in accordance with the present invention.
REFERENCE COUNT:          37    THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS
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NEWS	12	SEP 14	STN Patent Forum to be held October 13, 2004, in Iselin, NJ
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FILE COVERS 1907 - 13 Oct 2004 VOL 141 ISS 16
FILE LAST UPDATED: 12 Oct 2004 (20041012/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

```
=> s separat? oxygen (4a) (syngas or synthesis gas)
        310801 SEPARAT?
        259470 SEP
         12504 SEPS
        270806 SEP
                  (SEP OR SEPS)
        431317 SEPD
             3 SEPDS
        431320 SEPD
                  (SEPD OR SEPDS)
         85407 SEPG
             1 SEPGS
         85408 SEPG
                  (SEPG OR SEPGS)
        531929 SEPN
         34363 SEPNS
        549268 SEPN
                  (SEPN OR SEPNS)
       1295005 SEPARAT?
                  (SEPARAT? OR SEP OR SEPD OR SEPG OR SEPN)
        651629 OXYGEN
          6364 OXYGENS
        656066 OXYGEN
                  (OXYGEN OR OXYGENS)
           480 SEPARAT? OXYGEN
                  (SEPARAT?(W)OXYGEN)
          3281 SYNGAS
            13 SYNGASES
          3286 SYNGAS
                  (SYNGAS OR SYNGASES)
       1144729 SYNTHESIS
             3 SYNTHESISES
         62634 SYNTHESES
       1180182 SYNTHESIS
                  (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
       1382415 GAS
        475959 GASES
       1553122 GAS
                  (GAS OR GASES)
         14913 SYNTHESIS GAS
                  (SYNTHESIS(W)GAS)
```

```
L1            1 SEPARAT? OXYGEN (4A) (SYNGAS OR SYNTHESIS GAS)

=> d l1

L1   ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   1993:411909  CAPLUS
DN   119:11909
TI   Manufacture of synthesis gas
IN   Uchijima, Toshio; Kunimori, Kimio; Nakamura, Junji
PA   Mitsubishi Kasei Corp., Japan
SO   Jpn. Kokai Tokkyo Koho, 5 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.         DATE
     ----------------    ----   --------    --------------------    --------
PI   JP 04367501          A2    19921218    JP 1991-168806          19910613
PRAI JP 1991-168806              19910613


=> d l1 ibib ab

L1   ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         1993:411909  CAPLUS
DOCUMENT NUMBER:          119:11909
TITLE:                    Manufacture of synthesis gas
INVENTOR(S):              Uchijima, Toshio; Kunimori, Kimio; Nakamura, Junji
PATENT ASSIGNEE(S):       Mitsubishi Kasei Corp., Japan
SOURCE:                   Jpn. Kokai Tokkyo Koho, 5 pp.
                          CODEN: JKXXAF
DOCUMENT TYPE:            Patent
LANGUAGE:                 Japanese
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.          KIND   DATE        APPLICATION NO.         DATE
     ----------------    ----   --------    --------------------    --------
     JP 04367501          A2    19921218    JP 1991-168806          19910613
PRIORITY APPLN. INFO.:                     JP 1991-168806          19910613
AB   A method for manufacture of synthesis gas comprises contacting an O-containing
gas
     (e.g., 10% O2/90% He) with a solid O-activating agent (e.g., 5 weight%
     Rh/SiO2) and contacting the agent with a methane-containing gas (e.g., 2%
     CH4/98% He) to obtain a synthesis gas by partial oxidation  The contacting
     steps can be repeatedly applied.  The method improves CH4 conversion with
     high CO selectivity at low-temperature reaction conditions.


=> d his

     (FILE 'HOME' ENTERED AT 13:33:10 ON 13 OCT 2004)

     FILE 'CAPLUS' ENTERED AT 13:33:19 ON 13 OCT 2004
L1            1 S SEPARAT? OXYGEN (4A) (SYNGAS OR SYNTHESIS GAS)

=> s remov? oxygen (3a) (syngas or synthesis gas)
       1117013 REMOV?
        651629 OXYGEN
          6364 OXYGENS
        656066 OXYGEN
                  (OXYGEN OR OXYGENS)
           624 REMOV? OXYGEN
                  (REMOV?(W)OXYGEN)
```

```
          3281 SYNGAS
            13 SYNGASES
          3286 SYNGAS
                 (SYNGAS OR SYNGASES)
       1144729 SYNTHESIS
             3 SYNTHESISES
         62634 SYNTHESES
       1180182 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
       1382415 GAS
        475959 GASES
       1553122 GAS
                 (GAS OR GASES)
         14913 SYNTHESIS GAS
                 (SYNTHESIS(W)GAS)
L2           1 REMOV? OXYGEN (3A) (SYNGAS OR SYNTHESIS GAS)

=> s purif? (2a) synthesis gas
        747385 PURIF?
       1144729 SYNTHESIS
             3 SYNTHESISES
         62634 SYNTHESES
       1180182 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
       1382415 GAS
        475959 GASES
       1553122 GAS
                 (GAS OR GASES)
         14913 SYNTHESIS GAS
                 (SYNTHESIS(W)GAS)
L3         447 PURIF? (2A) SYNTHESIS GAS

=> s l3 and partial oxid?
        350805 PARTIAL
           928 PARTIALS
        351370 PARTIAL
                 (PARTIAL OR PARTIALS)
       2652455 OXID?
          9765 PARTIAL OXID?
                 (PARTIAL(W)OXID?)
L4          29 L3 AND PARTIAL OXID?

=> s l4 and (remov? (1a) oxygen or separat? (1a) oxygen)
       1117013 REMOV?
        651629 OXYGEN
          6364 OXYGENS
        656066 OXYGEN
                 (OXYGEN OR OXYGENS)
          7956 REMOV? (1A) OXYGEN
        310801 SEPARAT?
        259470 SEP
         12504 SEPS
        270806 SEP
                 (SEP OR SEPS)
        431317 SEPD
             3 SEPDS
        431320 SEPD
                 (SEPD OR SEPDS)
         85407 SEPG
             1 SEPGS
         85408 SEPG
                 (SEPG OR SEPGS)
        531929 SEPN
         34363 SEPNS
```

```
      549268 SEPN
                (SEPN OR SEPNS)
     1295005 SEPARAT?
                (SEPARAT? OR SEP OR SEPD OR SEPG OR SEPN)
      651629 OXYGEN
        6364 OXYGENS
      656066 OXYGEN
                (OXYGEN OR OXYGENS)
        3962 SEPARAT? (1A) OXYGEN
L5         1 L4 AND (REMOV? (1A) OXYGEN OR SEPARAT? (1A) OXYGEN)

=> d l5

L5   ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   1993:411738  CAPLUS
DN   119:11738
TI   Lowering the content of iron and nickel carbonyls in generator gas by
     increasing the temperature in the reactor for hydrolysis of carbonyl
     sulfide
AU   Loukota, Jiri; Kubicka, Rudolf
CS   Chem. Zavody, Litvinov, Czech.
SO   Chemicky Prumysl (1993), 43(2), 43-5
     CODEN: CHPUA4; ISSN: 0009-2789
DT   Journal
LA   Czech


=> d l5 ibib ab

L5   ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         1993:411738  CAPLUS
DOCUMENT NUMBER:          119:11738
TITLE:                    Lowering the content of iron and nickel carbonyls in
                          generator gas by increasing the temperature in the
                          reactor for hydrolysis of carbonyl sulfide
AUTHOR(S):                Loukota, Jiri; Kubicka, Rudolf
CORPORATE SOURCE:         Chem. Zavody, Litvinov, Czech.
SOURCE:                   Chemicky Prumysl (1993), 43(2), 43-5
                          CODEN: CHPUA4; ISSN: 0009-2789
DOCUMENT TYPE:            Journal
LANGUAGE:                 Czech
AB   Removal of trace amts. of Fe(CO)5 and Ni(CO)4 from synthetic gas, produced
     by partial oxidn. of petroleum refining residues and
     used mainly for H manufacture, was investigated.  After desulfurization, the
     synthesis gas is saturated with steam and passed through a reactor filled with
     a Co-Mo/Al2O3 catalyst and a reactor filled with AC2O3 to remove residual
     O, hydrolyze COS, and decompose Fe(CO)5 and Ni(CO)4.  When temperature in the
     hydrolysis step was increased from 150 to 200°, removal of Fe(CO)5
     was increased by 85% but removal of Ni(CO)4 was increased only by 25%.
     However, amount of deposits in the downstream high-temperature conversion
     equipment was decreased by .apprx.70%.


=> d his

     (FILE 'HOME' ENTERED AT 13:33:10 ON 13 OCT 2004)

     FILE 'CAPLUS' ENTERED AT 13:33:19 ON 13 OCT 2004
L1         1 S SEPARAT? OXYGEN (4A) (SYNGAS OR SYNTHESIS GAS)
L2         1 S REMOV? OXYGEN (3A) (SYNGAS OR SYNTHESIS GAS)
L3       447 S PURIF? (2A) SYNTHESIS GAS
L4        29 S L3 AND PARTIAL OXID?
L5         1 S L4 AND (REMOV? (1A) OXYGEN OR SEPARAT? (1A) OXYGEN)
```

```
=> s purif? (1a) (syngas or synthesis gas)
        747385 PURIF?
          3281 SYNGAS
            13 SYNGASES
          3286 SYNGAS
                 (SYNGAS OR SYNGASES)
       1144729 SYNTHESIS
             3 SYNTHESISES
         62634 SYNTHESES
       1180182 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
       1382415 GAS
        475959 GASES
       1553122 GAS
                 (GAS OR GASES)
         14913 SYNTHESIS GAS
                 (SYNTHESIS(W)GAS)
L6         426 PURIF? (1A) (SYNGAS OR SYNTHESIS GAS)

=> s l6 and remov? (oxygen or separat? oxygen)
MISSING OPERATOR 'REMOV? (OXYGEN'
The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> s l6 and (remov? oxygen or separat? oxygen)
       1117013 REMOV?
        651629 OXYGEN
          6364 OXYGENS
        656066 OXYGEN
                 (OXYGEN OR OXYGENS)
           624 REMOV? OXYGEN
                 (REMOV?(W)OXYGEN)
        310801 SEPARAT?
        259470 SEP
         12504 SEPS
        270806 SEP
                 (SEP OR SEPS)
        431317 SEPD
             3 SEPDS
        431320 SEPD
                 (SEPD OR SEPDS)
         85407 SEPG
             1 SEPGS
         85408 SEPG
                 (SEPG OR SEPGS)
        531929 SEPN
         34363 SEPNS
        549268 SEPN
                 (SEPN OR SEPNS)
       1295005 SEPARAT?
                 (SEPARAT? OR SEP OR SEPD OR SEPG OR SEPN)
        651629 OXYGEN
          6364 OXYGENS
        656066 OXYGEN
                 (OXYGEN OR OXYGENS)
           480 SEPARAT? OXYGEN
                 (SEPARAT?(W)OXYGEN)
L7           1 L6 AND (REMOV? OXYGEN OR SEPARAT? OXYGEN)

=> d l7

L7   ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   1968:444972  CAPLUS
DN   69:44972
```

TI **Removing oxygen** and carbonyl sulfide from gases
PA Shell Internationale Research Maatschappij N. V.
SO Neth. Appl., 10 pp.
CODEN: NAXXAN
DT Patent
LA Dutch
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	NL 6615007		19680425	NL	19661024
	FR 1541573			FR	
	GB 1145032			GB	
	US 3554689		19710000	US	